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(71) Applicant: TRUSTEES OF BOSTON UNIVERSITY
[US/US]; 147 Bay State Road, Boston, MA 02215 (US).

(72) Inventor: O'CONNOR, Peter, B.; 18 Halsey Road, Hyde Park, MA 02136 (US).

(74) Agents: CHANG, Y. Kurt_ et al.; LYDIG, VOIT & Mayer, LTD., Two Prudential Plaza, Suite 4900, 180 North Stetson, Chicago, IL 60601-6780 (US).

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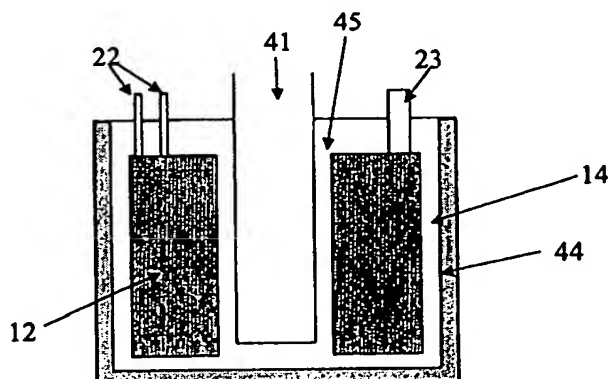
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(54) Title: APPARATUS AND METHOD FOR ION CYCLOTRON RESONANCE MASS SPECTROMETRY



(57) **Abstract:** An apparatus and method for performing ion mass spectrometry via Fourier transform ion cyclotron resonance utilizes a superconducting magnet with a bore and a vacuum chamber received in the magnet bore. The superconducting magnet and the vacuum chamber are enclosed in a cooling chamber and cooled together until the operating temperature of the magnet is reached. Because the temperature of the vacuum chamber is similar to the operating temperature of the superconducting magnet during operation, the wall of the vacuum chamber is sufficiently cold to function as a cryogenic vacuum pump to provide enhanced pumping of the volume in the vacuum chamber. The approach of cooling the vacuum chamber wall to provide cryogenic pumping can also be used when the magnet is of a non-superconducting type.

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